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A STUDY ON THE EFFECTIVENESS OF TRANSACTIONAL ANALYSIS FOR IMPROVING ORGANIZATIONAL PERFORMANCE

Daniel W. Buckner

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Monterey, California

THESIS

A STUDY ON THE EFFECTIVENESS OF TRANSACTIONAL ANALYSIS FOR IMPROVING ORGANIZATIONAL PERFORMANCE

by

Daniel W. Buckner

September, 1976

Advisors J. W. Creighton
J. C. Kiley

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by

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Naval Air Test Center, Patuxent River, Md.
B.S.E.E., University of Maryland, 1965

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I. INTRODUCTION

Organizations are concerned with improving performance (Drucker, 1973). Empirical evidence supports the theory that awareness of basic human needs by management can improve performance of the organization (Maslow, 1970).

Further highlighting the importance of an understanding of the basic human needs for improved performance is a statement by Maslow, "When we talk about the needs of human beings we talk about the essence of their lives". Managers, then, must be concerned with basic human needs in order to improve performance.

Much work has been done on the study of basic human needs and the relationships of people working together, but no one system of describing and analyzing human behavior has proven completely successful. Management cannot wait until scientists and scholars have completed their work in this area. Management must try to make the organization perform today (Drucker, 1973).

A new system for understanding basic human behavior has been developed in recent years. This new system for explaining human behavior is called "Transactional Analysis" and was developed by the late Dr. Eric Berne.

OBJECTIVE AND SCOPE OF THIS STUDY

Supervisory and personnel training utilizing both conventional human needs concepts and Transactional analysis techniques have been given to employees in the Department of Defense. The purpose of this study is to compare the relative effectiveness of conventional training and Transactional Analysis for improving performance.

This study is based on the assumption that a greater awareness of basic human needs will lead to improved performance (Maslow, 1970). The study was conducted by use of a survey to determine whether Transactional Analysis, as used at the Pacific Missile Test Center, Point Mugu, California, contributed to a greater awareness of basic human needs than did conventional training, as used at the Naval Air Test Center, Patuxent River, Maryland.

To conduct this study, two populations suitable for the purpose of this investigation were first identified. A questionnaire was then developed and administered to the two populations. The responses were then compared using statistical analysis to determine if Transactional Analysis training resulted in a greater awareness of basic human needs than did conventional training.

The populations considered for use in this study were limited to employees at two Naval Air Systems Command field activities.

With the assistance of the Civilian Personnel Office at the Naval Air Test Center, Patuxent River, Maryland, a group

of personnel was identified who had received human needs training using conventional theories. At the Pacific Missile Test Center, Point Mugu, California, the Civilian Personnel Office helped identify a group of personnel who had received training using Transactional Analysis.

II. A DESCRIPTION OF TRANSACTIONAL ANALYSIS AND THE COMPARED TRAINING PROGRAMS

Transactional Analysis is based on the observations of Dr. Eric Berne, during his work as a psycotherapist in San Francisco, that each person demonstrates three very different forms of behavior. At times a person acts and feels like his parent or parent figure. When a person gestures, sounds, and carries himself very nearly as his parent figure did, Berne said that the person was in his Parent ego-state. At other times a person reasons objectively, processes data, solves problems, asks questions, and gives information essentially without feelings, rather like a computer. A person behaving in this manner is in his adult ego-state. At other times a person may think and feel as he did when he was a child, in this case he is in his Child ego-state. Berne used these three ego states to describe his analysis of human behavior. In this paper Parent, Adult, and Child when capitalized will refer to ego states and not to actual parents, adults, or children.

Berne observed that a person in the Parent mode directs himself at another Parent or at a Child. The Child directs himself at another Child or at a Parent. An Adult looks for another Adult. If the Parent is being critical then probably a rebellious or compliant Child will respond. If the Parent is being nuturing then probably a grateful, appreciative Child will respond. This pretty much goes the other way also:

a rebellious Child usually stimulating a critical Parent. The Adult, like a computer, must be turned on to activate. Internally, the Adult is a good mediator between Parent and Child. Externally, the Adult is a good problem solver, but lacks spontaneity (Berne, 1964).

An exchange of recognition between two persons is said to constitute a transaction. All transactions can be classified as either complementary, crossed or ulterior (James and Jongeward, 1971).

A complementary transaction occurs when a message sent from a specific ego state, gets the predicted response from a specific ego state in the other person. The following is an example of a complementary transaction:

Stimulus: Adult to Adult - Where are my cuff links?

Response: Adult to Adult - On the desk.

In this case the lines of communication are open, and the people can continue transacting with one another.

A crossed transaction occurs when an unexpected response is made to the stimulus. The following is an example of a crossed transaction:

Stimulus: Adult to Adult - Where are my cuff links?

Response: Parent to Child - Why don't you keep track of your cuff links?

In this case communications are broken off and the people will tend to withdraw from one another.

An ulterior transaction occurs when a stimulus is directed to one ego state, but is intended to hook another ego state.

The following is an example of an ulterior transaction:

Stimulus: Open - Adult to Adult - This car is our finest, but it may be too expensive for you.
Hidden - Adult to Child - You probably can't afford it.

Response: Adult to Adult - Yes, it is too expensive for me.
Child to Adult - I'll take it.

In this example the hidden message is rejected if the Adult responds, and it is accepted if the Child is hooked.

Berne also observed that people early in life very often made decisions about their life position when there was much confusion and insufficient data. These decisions such as "I'm O.K. - You're Not O.K.", "I'm Not O.K. - You're O.K.", which made sense to a very young child, provide the basis for a life script. The person lives his life according to his script in order to reinforce the life position he adopted during childhood. Berne believed that in the proper atmosphere unfortunate early decisions could be redecided in a more favorable manner (Holloway and Holloway, 1973).

DESCRIPTION OF CONVENTIONAL TRAINING USED AT NAVAL AIR TEST CENTER

At the Naval Air Test Center each person queried had attended at least one of the following courses:

- Basic Supervisory Development

The objectives of this course was to acquaint new

supervisors with the rudimentary skills of supervision. The instruction was principally by lecture and stressed leadership, communications, cooperation, and personnel functions.

- Supervision and Group Performance

  This course was given to explain the human behavior involved in accomplishing a group project. After an introduction to human relations, the course was taught using a participative style where the students conducted group projects in order to experience first hand the interactions involved in a group effort.

- Supervision of the Low Skilled and Culturally Different

  This course was intended to provide supervisors an awareness of other cultures besides their own. The course involved participation in which participants had to perform task from a disadvantaged position in order to get a feeling of what it was like to be disadvantaged.

These courses were classified as conventional training because they were based on the traditional theories of work, organizational design, and human needs. Frederick Taylor's study of work and Henri Fayol's organization design model provided part of the bases for the traditional training (Drucker, 1973). Maslow's "hierarchy of basic needs" was used to explain basic human needs in traditional training (Maslow, 1970).

DESCRIPTION OF PROGRAM USED AT PACIFIC MISSILE TEST CENTER

The Pacific Missile Test Center employees had each taken at least one of the following courses:

- Transactional Analysis Communications

  The objective of this course was to provide an understanding of and an improvement in personal communications. The dynamics of communications were explained in terms of Transactional Analysis ego states. Exercises were conducted to enable the students to feel their various ego states, and to experience the use of the ego states in problem solving.

- Career Women Seminar

  This seminar was intended to enable the participants to realize job satisfaction, and to make more effective contributions to their respective agencies. This seminar addressed questions such as "Who am I at work?", and "Do I want changes in my job or career?".

- Transactional Analysis and Your Career

  This course was intended to assist the participants in applying Transactional Analysis to their current jobs and to expand their goals. The course provided the students an introduction to Transactional Analysis as it might be applied to unblocking their potential power to get their careers moving.

- Communication for Women

  The objective of this course was to increase the participants' ability to communicate more effectively. The course included group discussions, films, and exercises to provide an opportunity for understanding and practicing effective communication skills.

These courses used Transactional Analysis as their base.

III. THE QUESTIONS AND THEIR RESULTS

An instrument was developed for use in measuring the employees' awareness and understanding of basic human needs. Demographic questions were also included in order to evaluate other factors that might influence the responses of the employees. The questionnaire was carefully worded to avoid the use of Transactional Analysis terminology which might cause a conditioned or triggered response on the part of the employees who had taken the Transactional Analysis training. The questionnaire was pretested by administering it to members of the Naval Aviation Executive Institute Management Program, Point Mugu, California. After pretesting and incorporating corrections, a total of 561 questionnaires were distributed at the Naval Air Test Center and the Pacific Missile Test Center. Appendix A contains a copy of the questionnaire and the cover letter.

Table 1 gives a breakdown of the number of returned questionnaires from the two bases.

DESCRIPTION OF THE QUESTIONNAIRE

Twelve questions contained in the questionnaire were designed to be answered by selection of one of five responses with numeric values as given on the following page.

TABLE 1

NUMBER OF RETURNS BY ORGANIZATION

Pacific Missile Test Center Point Mugu, California			Naval Air Test Center Patuxent River, Maryland			Combined		
Number Distributed	Number Returned (Usable)	Percentage Returned	Number Distributed	Number Returned (Usable)	Percentage Returned	Number Distributed	Number Returned (Usable)	Percentage Returned
263	184	70	298	172	57.7	561	356	63.5

Response	Numeric Value
Strongly Agree	1
Agree	2
No Opinion	3
Disagree	4
Strongly Disagree	5

To prevent the respondents from perceiving a pattern of desired answers, five of the questions were worded negatively (inverted) so that positive responses would be disagree or strongly disagree. To aid in analysis of the data, the responses for the inverted questions were recoded prior to the computer analysis so that disagree and strongly disagree were equated to agree and strongly agree. This recoding allowed all of the attitudinal data to be looked at with a uniform ranking scheme. Under this scheme, strongly agree and agree were taken as an indication of awareness and acceptance of the life position or human need addressed by the question.

RESPONSES TO ATTITUDINAL QUESTIONS

Questions 3, 9, and 11 were designed to measure the respondents' own perception of his personal O.K.-ness. None of these questions were inverted and respondents who felt a personal sense of O.K.-ness would tend to respond with an agree or strongly agree.

Question 3 - *"Generally, I feel confident of my supervisory abilities in the work situation."*

This question is based on the premise that a person holding an I'm O.K. life-position has faith in himself (Harris, 1967).

The frequency of response for each population is given below:

	PMTC	NATC
Strongly Agree	26	42
Agree	124	115
No Opinion	18	10
Disagree	10	4
Strongly Disagree	1	1
Missing	5	-

Question 9 - *"When in a supervisory role, I can adjust my attitudes towards employees as required for increased work performance."*

This question is founded on the belief that a person with an I'm O.K. life position has the flexibility to meet whatever situation comes up (James and Jongeward, 1971).

The responses of the populations to question 9 are given below:

	PTMC	NATC
Strongly Agree	18	25
Agree	119	127
No Opinion	33	12
Disagree	7	4
Strongly Disagree	1	2
Missing	6	2

Question 11 - *"I feel confident of my ability to handle inter-personal relations on the job."*

This question is based on the idea that a person with an I'm O.K. life-position feels capable of handling personal relationships.

The responses to this question are given below:

	PMTC	NATC
Strongly Agree	47	32
Agree	127	125
No Opinion	7	11
Disagree	3	4
Strongly Disagree	-	-

Questions 1, 8, and 10 were designed to measure the respondents' feelings about the O.K.-ness of others.

Question 1 - *"From my personal experience I have found that the concept taught in textbooks which states 'most employees are competent, capable persons' is incorrect."*

This question is inverted and respondents who felt that others are O.K. selected a disagree or strongly disagree answer.

The raw responses to this question are given below:

	PMTC	NATC
Strongly Agree	6	10
Agree	47	64
No Opinion	13	10
Disagree	98	71
Strongly Disagree	20	17

Question 8 - *"In my experience, I have found most employees are not capable of changing their work attitudes and habits to improve their work performance."*

This question reflects the view of persons who believe that others are not O.K. Respondents who felt that others are O.K. selected a strongly disagree or disagree answer to this question (Holloway and Holloway, 1973).

The raw responses to this question are given below:

	PMTC	NATC
Strongly Agree	5	3
Agree	33	27
No Opinion	7	8
Disagree	109	112
Strongly Disagree	30	22

Question 10 - *"Most employees can be trusted to perform and do a conscientious job when left on their own."*

This question is based on the theory that most people want to perform to the best of their abilities (James and Jongeward, 1967). Respondents who believed this theory selected an agree or strongly agree answer.

The responses to this question are given below:

	PMTC	NATC
Strongly Agree	20	17
Agree	138	123
No Opinion	3	3
Disagree	20	26
Strongly Disagree	2	2
Missing	1	1

Question 2 - *"I have found that for most employees the basic satisfaction of doing their work well eliminates the need for any additional recognition."*

This question is based on the theory that people have a basic need for recognition (Berne, 1964). Respondents who were aware of this need selected a disagree or strongly disagree response to this question.

The raw responses to this question are given below:

	PMTC	NATC
Strongly Agree	6	3
Agree	17	20
No Opinion	3	2
Disagree	85	82
Strongly Disagree	73	64
Missing	-	1

Question 4 - *"Employees have a definite need for emotional and physical stimulation to continue to be productive in the work situation."*

Question 4 is based on the fact that people have a biological, phychological, and social need for stimulation (Berne, 1964). An agree or strongly agree response was selected by respondents who were aware of this need.

The responses to this question are given below:

	PMTC	NATC
Strongly Agree	81	65
Agree	88	89
No Opinion	7	6
Disagree	4	8

	PMTC	NATC
Strongly Disagree	3	4
Missing	1	-

Question 5 - *"I disagree with the concept that employees will seek attention on the job, even if it be negative, rather than accept no recognition at all."*

This question is intended to measure the respondents' awareness of the fact that the need for recognition is so strong that people will even seek adverse recognition in the absence of positive recognition (Berne, 1964). Respondents who were aware of this fact selected a disagree or strongly disagree response to this question.

The raw responses to this question are given below:

	PMTC	NATC
Strongly Agree	12	11
Agree	63	69
No Opinion	18	14
Disagree	58	63
Strongly Disagree	30	15
Missing	3	-

Question 6 - *"Most employees have had their basic work attitudes and personalities established prior to entering the work force."*

Question 6 was included to test the respondents' awareness of childhood scripting. This theory is based on the hypothesis that most people live their lives according to

decisions that they made in early childhood (Holloway and Holloway, 1973).

The responses to this question are given below:

	PMTC	NATC
Strongly Agree	29	27
Agree	105	86
No Opinion	7	6
Disagree	38	46
Strongly Disagree	5	7

Question 7 - *"Most employees have a definite need for a structured daily work schedule."*

This question is based on the observation that people have a definite need to avoid boredom which results in a time structure-hunger (James and Jongeward, 1971). Awareness of time structure-hunger was reflected by selection of an agree or strongly agree response.

The responses to this question are given below:

	PMTC	NATC
Strongly Agree	9	29
Agree	109	95
No Opinion	10	8
Disagree	45	37
Strongly Disagree	11	2
Missing	-	1

Question 12 - *"In my experience I have not found the need for open and complete communications on the job to be as important as stated in textbooks."*

This question is used to measure the respondents' belief in the need for good communications on the job. The question is based on the assumption that business transactions cannot be completed in the absence of open communications (Berne, 1964). Respondents who believed in the need for good communications on the job selected a disagree or strongly disagree response to this question.

The raw responses to this question are given below:

	PMTC	NATC
Strongly Agree	6	9
Agree	14	15
No Opinion	5	8
Disagree	76	71
Strongly Disagree	83	68
Missing	-	1

Table 2 contains a summary of the responses from the two populations to the attitudinal questions. Many respondents indicated that question five was ambiguous. For this reason, the author decided not to use the responses to this question in calculating the average responses of the two populations.

RESPONSES TO DEMOGRAPHIC QUESTIONS

Questions 13 through 16 were included to gather demographic information from the respondents.

Question 13 - *"Please indicate the level of your formal education."*

1. High School
2. Associate of Arts degree or equivalent

BREAKDOWN OF RESPONSES FROM PMTC AND NATC

Question No. and Name	Population					
	PMTC Percentage of Responses			NATC Percentage of Responses		
	Agree	No Opinion	Disagree	Agree	No Opinion	Disagree
1. *You're O.K.-1	64.2	7.1	28.8	51.2	5.8	43.0
2. *Recognition Hunger	85.9	1.6	12.5	85.4	1.2	13.5
3. I'm O.K.-1	83.8	10.1	6.2	91.3	5.8	2.9
4. Stimulation Hunger	92.4	3.8	3.8	89.5	3.5	7.0
5. *Recognition Need Even Negative	48.6	9.9	41.4	45.3	8.1	46.5
6. Childhood Scripting	72.9	3.8	23.4	65.7	3.5	30.8
7. Time Structure Hunger	64.1	5.4	30.5	72.6	4.7	22.8
8. *You're O.K.-2	75.5	3.8	20.6	77.9	4.7	17.4
9. I'm O.K.-2	77.0	18.5	4.5	89.4	7.1	3.6
10. You're O.K.-3	86.3	1.6	12.0	81.9	1.8	16.4
11. I'm O.K.-3	94.6	3.8	1.6	91.3	6.4	2.3
12.*Need for Uncrossed Transactions	86.4	2.7	10.9	81.3	4.7	14.1
**Averages	80.3	6.4	14.1	79.8	4.4	15.8

*Recoded responses are used in this table.

**Responses to question 5 were not included in the averages.

3. More than two years college
4. Undergraduate degree
5. Graduate degree - Please state whether graduate degree is at the Masters or Ph.D. level ______________________________

The responses to this question are given below:

Group	PMTC	NATC
1	82	96
2	22	20
3	21	9
4	28	26
5	26	21
Missing	5	-

Question 14 - *"How long have you been in government?"*

1. One year or less
2. Two or three years
3 Four or five years
4. Six to ten years
5. More than ten years

The responses to this question are given below:

Group	PMTC	NATC
1	-	-
2	22	18
3	12	20
4	48	53
5	97	81
Missing	5	-

Question 15 - *"What is your Rank or Grade level?"*

The responses to this question were ranked in interval order. The responses to this question are given below:

Group	PMTC	NATC
GS 2&3	5	-
GS 4&5	72	46
GS 6&7	26	28
GS 8&9	10	17
GS 10&11	23	30
GS 12&13	34	40
GS 14&15	6	6
Missing	8	5

Question 16 - *"What is your age?"*

1. Twenty-four or under
2. Twenty-five to twenty-nine
3. Thirty to thirty-nine
4. Forty to forty-nine
5. Over forty-nine

The responses to this question are given below:

Group	PMTC	NATC
1	9	11
2	31	41
3	47	59
4	44	32
5	48	29
Missing	5	-

ANALYSIS OF DATA

The statistical Chi-square test was used to compare the responses of the two populations. Application of this test determined if the responses from the two populations differed at the 0.05 level of statistical significance (95% confidence level). For each question where the populations differed at the 0.05 level of statistical significance, the results were then checked to see if the responses showed a meaningful difference.

Table 3 contains the results of the Chi-square test for the two populations' response to each question. At the 0.05 level of statistical significance the two populations differed on only two of the attitudinal questions, 3 and 7, and two of the demographic questions, 15 and 16.

The findings of the data from the attitudinal questions show that the two populations were statistically alike 83% of the time. It is interesting to note the similarity of the average responses of the two populations as shown in Table 2. PMTC had an average percentage of 80.3 agree responses, and NATC had an average percentage of 79.9 agree responses. On the disagree responses PMTC had an average percentage of 14.1, and NATC had an average percentage of 15.8. These results show that both populations had a good awareness and acceptance of the concepts of basic human needs.

Table 3 indicates that the two populations differed at the 0.05 level of statistical significance on grade level and age. Because the two populations showed essentially the same over

TABLE 3

COMPARISON OF POPULATIONS FROM PMTC and NATC

Question No. & Name		χ^2 values resulting from comparison of responses from PMTC against NATC for each question *	**Degree of Freedom (No. of possible responses per question-1)	χ^2 value at which difference between PMTC and NATC are assumed at 95% confidence level	COMPARISON Populations are alike when χ^2 column 3 less than χ^2 column 5, differ when χ^2 for column 3 greater than column 5	
1	2	3	4	5***	6	7
					ALIKE	DIFFERENT
1.	Your're OK-1	8.56	4	9.49	****	
2.	Recognition	1.65	4	9.49	****	
3.	I'm OK-1	8.79	4	9.49	****	
4.	Stimulation	2.83	4	9.49	****	
5.	Neg. Recognition	5.95	4	9.49	****	
6.	Childhood Script	3.01	4	9.49	****	
7.	Time Structure	18.21	4	9.49		****
8.	You're OK-2	2.73	4	9.49	****	
9.	I'm OK-2	12.29	4	9.49		****
10.	You're OK-3	1.44	4	9.49	****	
11.	I'm OK-3	3.55	3	7.82	****	
12.	Uncrossed Trans.	2.40	4	9.49	****	

13.	Education Level	6.45	4	9.49	****	
14.	Yrs Govt. Service	3.82	3	7.82	****	
15.	GS Level	14.03	6	12.59		****
16.	Age	9.70	4	9.49		****

* The derivation of the χ^2 value is shown in Appendix B.

** Degree of freedom is the number of possible responses utilized minus one times the number of populations minus one. (No. of responses - 1) x (No. of populations - 1)

*** These values come from the Chi-square tables.

all response to the attitudinal questions, the differences between the two populations in these two demographic areas were not meaningful to this study.

APPENDIX A

QUESTIONNAIRE

This appendix contains an exact copy of the letter of introduction and questionnaire that was sent to 561 individuals at the Pacific Missile Test Center, Point Mugu, California and the Naval Air Test Center, Patuxent River, Maryland

NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA - 93940

IN REPLY REFER TO:
Code 55
0001-2

To Questionnaire Recipient:

This questionnaire has been sent to you in order to gather research data for a study on attitudes of employees located at a NAVAIR SYSCOM Field Activity. This study is part of a project being conducted through the Naval Postgraduate School, Monterey, California. The data is being analyzed by a member of the Naval Aviation Executive Institute Program located at Point Mugu, California.

Your answers will provide valuable and unique data for establishing a baseline on employee attitudes. Your personal identity and individual response will not be divulged. The questionnaires do not have to be signed. The success or failure of this research project will depend upon your response.

ase enter the most appropriate answer in the box at the right

	Strongly agree	Agree	No Opinion	Disagree	Strongly disagree	
From my personal experience I have found that the concept taught in text books which states "most employees are competent capable persons" is incorrect.	1	2	3	4	5	☐
I have found that for most employees the basic satisfaction of doing their work well eliminates the need for any additional recognition.	1	2	3	4	5	☐
Generally, I feel confident of my supervisory abilities in the work situation.	1	2	3	4	5	☐
Employees have a definite need for emotional and physical stimulation to continue to be productive in the work situation.	1	2	3	4	5	☐
I disagree with the concept that employees will seek attention on the job, even if it be negative, rather than accept no recognition at all.	1	2	3	4	5	☐
Most employees have had their basic work attitudes and personalities established prior to entering the work force.	1	2	3	4	5	☐
Most employees have a definite need for a structured daily work schedule.	1	2	3	4	5	☐
In my experience, I have found most employees are not capable of changing their work attitudes and habits to improve their work performance.	1	2	3	4	5	☐
When in a supervisory role I can adjust my attitudes toward employees as required for increased work performance.	1	2	3	4	5	☐
Most employees can be trusted to perform and do a conscientious job when left on their own.	1	2	3	4	5	☐
I feel confident of my ability to handle interpersonal relations on the job.	1	2	3	4	5	☐
In my experience I have not found the need for open and complete communications on the job to be as important as stated in text books.	1	2	3	4	5	☐

ase enter the most appropriate answer in the box at the right

Please indicate the level of your formal education.

1. High school /_/
2. Associate of Arts degree or equivalent /_/
3. More than two years college /_/
4. Undergraduate degree /_/
5. Graduate degree /_/ Please state whether graduate degree is at the masters or Ph.D. level ____________________

☐

How long have you been in government service?

1. One year or less /_/
2. Two or three years /_/
3. Four or Five years /_/
4. Six to ten years /_/
5. More than ten years /_/

☐

What is your Rank or Grade level?

____

☐

What is your age?

1. Twenty-four or under /_/
2. Twenty-five to twenty-nine /_/
3. Thirty to thirty-nine /_/
4. Forty to forty-nine /_/
5. Over Forty-nine /_/

☐

APPENDIX B

CHI-SQUARE CALCULATIONS

The Chi-square values shown in table 3 were calculated as follows:

$$\chi^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(O_{i,j} - E_{i,j})}{E_{i,j}}$$

where

$O_{i,j}$ = observed number of responses assigned to the $i^{\underline{th}}$ row of the $j^{\underline{th}}$ column.

$E_{i,j}$ = number of resposes expected to be assigned to the $i^{\underline{th}}$ row of the $j^{\underline{th}}$ column.

The expected values for each cell ($E_{i,j}$) were found by multiplying the column total times the row total, for each cell in the contingency table and dividing this product by the total number of responses.

The values of χ^2 resulting from the formula are distributed approximately as chi-square with df= $(r-1)(k-1)$, where r = the number of rows and k = the number of columns in the contingency table.

APPENDIX C

Population Histograms

```
 08 SEP 76        FILE - PMTC     - CREATED 08 SEP 76         PAGE   2

VAR001    YOU ARE OK1
     CODE
          I
       1. *********** (    20)
          I  STRONGLY AGREE
          I
       2. ************************************************** (    98)
          I  AGREE
          I
       3. ******** (    13)
          I  NO OPINION
          I
       4. ************************* (    47)
          I  DISAGREE
          I
       5. **** (     6)
          I  STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN          2.571      STD ERR         .080      MEDIAN          2.235
MODE          2.000      STD DEV        1.084      VARIANCE        1.175
KURTOSIS      -.861      SKEWNESS        .553      RANGE           4.000
MINIMUM       1.000      MAXIMUM        5.000      SUM           473.000
C.V. PCT     42.173      .95 C.I.       2.413            TO        2.728

VALID CASES     184      MISSING CASES     0
```

```
VAR002    RECOGNITION HUNGER
   CODE
          I
     1.00 ************************************** (    73)
          I  STRONGLY AGREE
          I
     2.00 ******************************************** (    85)
          I  AGREE
          I
     3.00 *** (     3)
          I  NO OPINION
          I
     4.00 ********** (    17)
          I  DISAGREE
          I
     5.00 **** (     6)
          I  STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN           1.902     STD ERR        .076     MEDIAN          1.724
MODE           2.000     STD DEV       1.036     VARIANCE        1.072
KURTOSIS       1.465     SKEWNESS      1.410     RANGE           4.000
MINIMUM        1.000     MAXIMUM       5.000     SUM           350.000
C.V. PCT      54.440     .95 C.I.      1.752           TO        2.053

VALID CASES      184     MISSING CASES     0
```

```
VAR003     I AM OK1
   CODE
           I
     1.00  ******** (     26)
           I  STRONGLY AGREE
           I
     2.00  ************************************* (    124)
           I  AGREE
           I
     3.00  ****** (     18)
           I  NO OPINION
           I
     4.00  **** (     10)
           I  DISAGREE
           I
     5.00  * (      1)
           I  STRONGLY DISAGREE
           I
        0  ** (      5)
(MISSING)  I
           I
           I.........I.........I.........I.........I.........I
           0        40        80       120       160       200
           FREQUENCY

MEAN          2.084     STD ERR        .054     MEDIAN          2.012
MODE          2.000     STD DEV        .718     VARIANCE         .515
KURTOSIS      2.438     SKEWNESS      1.155     RANGE           4.000
MINIMUM       1.000     MAXIMUM       5.000     SUM           373.000
C.V. PCT     34.452     .95 C.I.      1.978          TO         2.190

VALID CASES     179     MISSING CASES     5
```

```
VAR004    STIMULATION HUNGER
   CODE
          I
   1.00 ****************************************** (      81)
          I  STRONGLY AGREE
          I
   2.00 ********************************************* (      88)
          I  AGREE
          I
   3.00 ***** (       7)
          I  NO OPINION
          I
   4.00 *** (       4)
          I  DISAGREE
          I
   5.00 *** (       3)
          I  STRONGLY DISAGREE
          I
      0 ** (       1)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN            1.689      STD ERR         .058      MEDIAN          1.619
MODE            2.000      STD DEV         .789      VARIANCE         .622
KURTOSIS        4.344      SKEWNESS       1.688      RANGE           4.000
MINIMUM         1.000      MAXIMUM        5.000      SUM           309.000
C.V. PCT       46.716      .95 C.I.       1.573              TO      1.804

VALID CASES       183      MISSING CASES      1
```

```
 08 SEP 76         FILE - PMTC      - CREATED 08 SEP 76          PAGE  10

VAR005    RECOGNITION NEED EVEN NEGATIVE
     CODE
          I
     1.00 **************** (      30)
          I  STRONGLY AGREE
          I
     2.00 ****************************** (      58)
          I  AGREE
          I
     3.00 ********** (      18)
          I  NO OPINION
          I
     4.00 ********************************* (      63)
          I  DISAGREE
          I
     5.00 ******* (      12)
          I  STRONGLY DISAGREE
          I
        0 *** (       3)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN            2.829     STD ERR          .093     MEDIAN            2.639
MODE            4.000     STD DEV         1.255     VARIANCE          1.576
KURTOSIS       -1.317     SKEWNESS         .022     RANGE             4.000
MINIMUM         1.000     MAXIMUM         5.000     SUM             512.000
C.V. PCT       44.381     .95 C.I.        2.645           TO          3.013

VALID CASES       181     MISSING CASES       3
```

```
VAR006    CHILDHOOD SCRIPTING
     CODE
          I
     1.00 ******** (      29)
          I  STRONGLY AGREE
          I
     2.00 *************************** (     105)
          I  AGREE
          I
     3.00 *** (       7)
          I  NO OPINION
          I
     4.00 *********** (      38)
          I  DISAGREE
          I
     5.00 ** (       5)
          I  STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        40        80       120       160       200
          FREQUENCY


MEAN           2.375     STD ERR        .078     MEDIAN        2.100
MODE           2.000     STD DEV       1.064     VARIANCE      1.132
KURTOSIS       -.387     SKEWNESS       .793     RANGE         4.000
MINIMUM        1.000     MAXIMUM       5.000     SUM         437.000
C.V. PCT      44.795     .95 C.I.      2.220           TO      2.530

VALID CASES      184     MISSING CASES     0
```

```
 08 SEP 76         FILE - PMIC      - CREATED 08 SEP 76          PAGE  14

VAR007    TIME STRUCTURE HUNGER
     CODE
          I
     1.00 *** (      9)
          I  STRONGLY AGREE
          I
     2.00 **************************** (   109)
          I  AGREE
          I
     3.00 **** (     10)
          I  NO OPINION
          I
     4.00 ************ (     45)
          I  DISAGREE
          I
     5.00 **** (     11)
          I  STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        40        80       120       160       200
          FREQUENCY

MEAN          2.674     STD ERR          .080     MEDIAN          2.261
MODE          2.000     STD DEV         1.082     VARIANCE        1.172
KURTOSIS      -.781     SKEWNESS         .726     RANGE           4.000
MINIMUM       1.000     MAXIMUM         5.000     SUM           492.000
C.V. PCT     40.483     .95 C.I.        2.516           TO        2.831

VALID CASES     184     MISSING CASES       0
```

```
08 SEP 76          FILE - PMTC      - CREATED 08 SEP 76          PAGE  16

VAR008    YOU ARE OK2
    CODE
         I
    1.00 ********* (       30)
         I  STRONGLY AGREE
         I
    2.00 **************************** (      109)
         I  AGREE
         I
    3.00 *** (       7)
         I  NO OPINION
         I
    4.00 ********* (       33)
         I  DISAGREE
         I
    5.00 ** (       5)
         I  STRONGLY DISAGREE
         I
         I.........I.........I.........I.........I.........I
         0        40        80       120       160       200
         FREQUENCY


MEAN          2.315     STD ERR       .076     MEDIAN        2.069
MODE          2.000     STD DEV      1.034     VARIANCE      1.069
KURTOSIS      -.031     SKEWNESS      .917     RANGE         4.000
MINIMUM       1.000     MAXIMUM      5.000     SUM         426.000
C.V. PCT     44.668     .95 C.I.     2.165         TO        2.466

VALID CASES     184     MISSING CASES    0
```

```
08 SEP 76          FILE - PMTC      - CREATED 08 SEP 76          PAGE  18

VAR009     I AM OK2
     CODE
           I
     1.00 ****** (     18)
           I  STRONGLY AGREE
           I
     2.00 ******************************* (     119)
           I  AGREE
           I
     3.00 ********* (     33)
           I  NO OPINION
           I
     4.00 *** (      7)
           I  DISAGREE
           I
     5.00 * (      1)
           I  STRONGLY DISAGREE
           I
        0 *** (      6)
(MISSING) I
           I
           I.........I.........I.........I.........I.........I
           0        40        80       120       160       200
           FREQUENCY

MEAN           2.180      STD ERR        .051      MEDIAN        2.097
MODE           2.000      STD DEV        .682      VARIANCE       .465
KURTOSIS       2.000      SKEWNESS       .941      RANGE         4.000
MINIMUM        1.000      MAXIMUM       5.000      SUM         388.000
C.V. PCT      31.272      .95 C.I.      2.079            TO      2.281

VALID CASES      178      MISSING CASES     6
```

```
VAR010    YOU ARE OK3
     CODE
          I
     1.00 ****** (    20)
          I  STRONGLY AGREE
          I
     2.00 ************************************ (   138)
          I  AGREE
          I
     3.00 ** (     3)
          I  NO OPINION
          I
     4.00 ****** (    20)
          I  DISAGREE
          I
     5.00 ** (     2)
          I  STRONGLY DISAGREE
          I
        0 * (     1)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        40        80       120       160       200
          FREQUENCY

MEAN          2.158     STD ERR         .059     MEDIAN         2.018
MODE          2.000     STD DEV         .800     VARIANCE        .640
KURTOSIS      2.375     SKEWNESS       1.518     RANGE          4.000
MINIMUM       1.000     MAXIMUM        5.000     SUM          395.000
C.V. PCT     37.051     .95 C.I.       2.042          TO        2.275

VALID CASES     183     MISSING CASES      1
```

```
08 SEP 76          FILE - PMTC      - CREATED 08 SEP 76          PAGE  22

VAR011     I AM OK3
    .  CODE
            I
      1.00 ************* (     47)
            I  STRONGLY AGREE
            I
      2.00 ********************************** (    127)
            I  AGREE
            I
      3.00 *** (      7)
            I  NO OPINION
            I
      4.00 ** (      3)
            I  DISAGREE
            I
            I.........I.........I.........I.........I.........I
            0        40        80       120       160       200
            FREQUENCY

MEAN            1.815      STD ERR         .042      MEDIAN          1.854
MODE            2.000      STD DEV         .571      VARIANCE         .326
KURTOSIS        2.317      SKEWNESS        .537      RANGE           3.000
MINIMUM         1.000      MAXIMUM        4.000      SUM           334.000
C.V. PCT       31.470      .95 C.I.       1.732             TO       1.898

VALID CASES       184      MISSING CASES      0
```

```
08 SEP 76        FILE - PMTC      - CREATED 08 SEP 76         PAGE  24

VAR012    NEED FOR UNCROSSED TRANSACTIONS
   CODE
          I
   1.00   ******************************************* (      83)
          I  STRONGLY AGREE
          I
   2.00   *************************************** (      76)
          I  AGREE
          I
   3.00   **** (       5)
          I  NO OPINION
          I
   4.00   ******** (      14)
          I  DISAGREE
          I
   5.00   **** (       6)
          I  STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN            1.826     STD ERR         .076     MEDIAN          1.618
MODE            1.000     STD DEV        1.025     VARIANCE        1.052
KURTOSIS        1.819     SKEWNESS       1.511     RANGE           4.000
MINIMUM         1.000     MAXIMUM        5.000     SUM           336.000
C.V. PCT       56.156     .95 C.I.       1.677           TO        1.975

VALID CASES       184     MISSING CASES      0
```

```
VAR013     FDUCATION LEVEL
    CODE
          I
    1.00  ****************************************** (    82)
          I  -HIGH----SCHOOL-
          I
    2.00  ************ (    22)
          I  -ASSOC--ARTS--
          I
    3.00  ************ (    21)
          I  GT2 YEAR-COLLEGE
          I
    4.00  *************** (    28)
          I  --B.S.----
          I
    5.00  ************** (    26)
          I  GRADUTE DEGREE--
          I
       0  **** (     5)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN          2.408     STD ERR        .115     MEDIAN          1.841
MODE          1.000     STD DEV       1.535     VARIANCE        2.355
KURTOSIS     -1.290     SKEWNESS       .530     RANGE           4.000
MINIMUM       1.000     MAXIMUM       5.000     SUM           431.000
C.V. PCT     63.737     .95 C.I.      2.181           TO        2.634

VALID CASES     179     MISSING CASES     5
```

```
08 SEP 76        FILE - PMTC      - CREATED 08 SEP 76         PAGE  28

VAR014    YEARS OF GOVERNMENT SERVICE
    CODE
         I
    2.00 ************ (      22)
         I   -I-OR-3-
         I
    3.00 ******* (      12)
         I   -4-OR-5-
         I
    4.00 ************************* (      48)
         I   -6-TO-10
         I
    5.00 ************************************************* (      97)
         I   GREATER-10
         I
       0 **** (       5)
(MISSING) I
         I
         I.........I.........I.........I.........I.........I
         0        20        40        60        80       100
         FREQUENCY

MEAN           4.229      STD ERR          .077      MEDIAN          4.577
MODE           5.000      STD DEV         1.027      VARIANCE        1.054
KURTOSIS        .076      SKEWNESS       -1.156      RANGE           3.000
MINIMUM        2.000      MAXIMUM         5.000      SUM           757.000
C.V. PCT      24.276      .95 C.I.        4.078            TO        4.380

VALID CASES      179      MISSING CASES       5
```

```
08 SEP 76          FILE - PMTC      - CREATED 08 SEP 76          PAGE  30

VAR015    GS LEVEL BY GROUP
     CODE
          I
     1.00 **** (       5)
          I  GS-2-AND-3
          I
     2.00 ************************************* (      72)
          I  GS-4-AND 5
          I
     3.00 ************** (      26)
          I  GS-6-AND-7
          I
     4.00 ****** (      10)
          I  GS-8-AND-9
          I
     5.00 ************* (      23)
          I  GS-10--AND-11
          I
     6.00 ****************** (      34)
          I  GS-12-AND--13
          I
     7.00 **** (       6)
          I  GS-14-AND--15
          I
        0 ***** (       8)
 (MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY


MEAN          3.568      STD ERR        .132      MEDIAN         2.923
MODE          2.000      STD DEV       1.755      VARIANCE       3.081
KURTOSIS     -1.321      SKEWNESS       .458      RANGE          6.000
MINIMUM       1.000      MAXIMUM       7.000      SUM          628.000
C.V. PCT     49.193      .95 C.I.      3.307             TO      3.829

VALID CASES     176      MISSING CASES     8
```

```
08 SEP 76          FILE - PMTC       - CREATED 08 SEP 76           PAGE  32

VAR016     AGE BY GROUP
      CODE
           I
      1.00 ********** (      9)
           I  -UNDER  24
           I
      2.00 ******************************** (      31)
           I  -25- TO--29
           I
      3.00 ************************************************ (     47)
           I  -30-TO---39
           I
      4.00 ********************************************* (     44)
           I  -40-TO---49
           I
      5.00 ************************************************* (     48)
           I  -OVER--49
           I
         0 ****** (      5)
 (MISSING) I
           I
           I.........I.........I.........I.........I.........I
           0        10        20        30        40        50
           FREQUENCY

MEAN            3.508      STD ERR        .090      MEDIAN          3.557
MODE            5.000      STD DEV       1.201      VARIANCE        1.442
KURTOSIS        -.936      SKEWNESS      -.293      RANGE           4.000
MINIMUM         1.000      MAXIMUM       5.000      SUM           628.000
C.V. PCT       34.232      .95 C.I.      3.331           TO         3.686

VALID CASES       179      MISSING CASES     5
```

```
08 SEP 76          FILE - NATC       - CREATED 08 SEP 76          PAGE   2

VAR001     YOU ARE OK1
   . CODE
            I
         1. ********** (    17)
            I  STRONGLY AGREE
            I
         2. ************************************* (    71)
            I  AGREE
            I
         3. ****** (    10)
            I  NO OPINION
            I
         4. ********************************* (    64)
            I  DISAGREE
            I
         5. ****** (    10)
            I  STRONGLY DISAGREE
            I
            I.........I.........I.........I.........I.........I
            0        20        40        60        80       100
            FREQUENCY

MEAN           2.878       STD ERR        .090       MEDIAN         2.472
MODE           2.000       STD DEV       1.186       VARIANCE       1.406
KURTOSIS      -1.340       SKEWNESS       .089       RANGE          4.000
MINIMUM        1.000       MAXIMUM       5.000       SUM          495.000
C.V. PCT      41.203       .95 C.I.      2.699             TO       3.056

VALID CASES      172       MISSING CASES     0
```

```
08 SEP 76         FILE - NATC       - CREATED 08 SEP 76          PAGE   4

VAR002     RECOGNITION HUNGER
    CODE
              I
     1.00 ********************************* (      64)
              I   STRONGLY AGREE
              I
     2.00 ****************************************** (      82)
              I   AGREE
              I
     3.00 ** (       2)
              I   NO OPINION
              I
     4.00 *********** (      20)
              I   DISAGREE
              I
     5.00 *** (       3)
              I   STRONGLY DISAGREE
              I
        0 ** (       1)
(MISSING) I
              I
              I.........I.........I.........I.........I.........I
              0        20        40        60        80       100
              FREQUENCY

MEAN            1.924      STD ERR        .077      MEDIAN          1.762
MODE            2.000      STD DEV       1.006      VARIANCE        1.012
KURTOSIS         .984      SKEWNESS      1.265      RANGE           4.000
MINIMUM         1.000      MAXIMUM       5.000      SUM           329.000
C.V. PCT       52.282      .95 C.I.      1.772            TO        2.076

VALID CASES      171       MISSING CASES     1
```

```
08 SEP 76          FILE - NATC     - CREATED 08 SEP 76          PAGE   6

VAR003     I AM OK1
     CODE
           I
     1.00  ************ (      42)
           I  STRONGLY AGREE
           I
     2.00  ****************************** (    115)
           I  AGREE
           I
     3.00  **** (     10)
           I  NO OPINION
           I
     4.00  ** (      4)
           I  DISAGREE
           I
     5.00  * (      1)
           I  STRONGLY DISAGREE
           I
           I.........I.........I.........I.........I.........I
           0        40        80       120       160       200
           FREQUENCY

MEAN           1.878      STD ERR          .050      MEDIAN          1.883
MODE           2.000      STD DEV          .660      VARIANCE         .435
KURTOSIS       3.735      SKEWNESS        1.115      RANGE           4.000
MINIMUM        1.000      MAXIMUM         5.000      SUM           323.000
C.V. PCT      35.133      .95 C.I.        1.779            TO        1.977

VALID CASES      172      MISSING CASES       0
```

```
VAR004     STIMULATION HUNGER
    CODE
           I
    1.00 ********************************** (     65)
           I   STRONGLY AGREE
           I
    2.00 ********************************************** (     89)
           I   AGREF
           I
    3.00 **** (      6)
           I   NO OPINION
           I
    4.00 ***** (      8)
           I   DISAGREF
           I
    5.00 *** (      4)
           I   STRONGLY DISAGREE
           I
           I.........I.........I.........I.........I.........I
           0        20        40        60        80       100
           FREQUENCY

MEAN            1.820      STD ERR          .067      MEDIAN           1.736
MODE            2.000      STD DEV          .883      VARIANCE          .780
KURTOSIS        3.098      SKEWNESS        1.584      RANGE            4.000
MINIMUM         1.000      MAXIMUM         5.000      SUM            313.000
C.V. PCT       48.538      .95 C.I.        1.687              TO       1.953

VALID CASES       172      MISSING CASES      0
```

```
VAR005    RECOGNITION NEED EVEN NEGATIVE
     CODE
          I
     1.00 ********* (     15)
          I  STRONGLY AGREE
          I
     2.00 ********************************* (     63)
          I  AGREE
          I
     3.00 ******** (     14)
          I  NO OPINION
          I
     4.00 ************************************ (     69)
          I  DISAGREE
          I
     5.00 ******* (     11)
          I  STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN           2.988     STD ERR        .090     MEDIAN         3.071
MODE           4.000     STD DEV       1.175     VARIANCE       1.380
KURTOSIS      -1.310     SKEWNESS      -.064     RANGE          4.000
MINIMUM        1.000     MAXIMUM       5.000     SUM          514.000
C.V. PCT      39.310     .95 C.I.      2.812           TO       3.165

VALID CASES      172     MISSING CASES     0
```

```
VAR006    CHILDHOOD SCRIPTING
   . CODE
          I
     1.00 *************** (    27)
          I   STRONGLY AGREE
          I
     2.00 ******************************************** (    86)
          I   AGREE
          I
     3.00 **** (     6)
          I   NO OPINION
          I
     4.00 ************************ (    46)
          I   DISAGREE
          I
     5.00 ***** (     7)
          I   STRONGLY DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN         2.535       STD ERR         .089       MEDIAN        2.186
MODE         2.000       STD DEV        1.162       VARIANCE      1.350
KURTOSIS     -.973       SKEWNESS        .521       RANGE         4.000
MINIMUM      1.000       MAXIMUM        5.000       SUM         436.000
C.V. PCT    45.830       .95 C.I.       2.360            TO       2.710

VALID CASES    172       MISSING CASES     0
```

```
VAR007    TIME STRUCTURE HUNGER
   CODE
          I
     1.00 **************** (     29)
          I  STRONGLY AGREE
          I
     2.00 ************************************************* (     95)
          I  AGREE
          I
     3.00 ***** (      8)
          I  NO OPINION
          I
     4.00 ******************** (     37)
          I  DISAGREE
          I
     5.00 ** (      2)
          I  STRONGLY DISAGREE
          I
        0 ** (      1)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN           2.345     STD ERR          .079     MEDIAN        2.095
MODE           2.000     STD DEV         1.037     VARIANCE      1.074
KURTOSIS       -.567     SKEWNESS         .704     RANGE         4.000
MINIMUM        1.000     MAXIMUM         5.000     SUM         401.000
C.V. PCT      44.201     .95 C.I.        2.189           TO      2.501

VALID CASES      171     MISSING CASES       1
```

```
08 SEP 76          FILE - NATC      - CREATED 08 SEP 76          PAGE  16

VAR008     YOU ARE OK2
   CODE
         I
    1.00 ******* (      22)
         I  STRONGLY AGREE
         I
    2.00 ***************************** (    112)
         I  AGREE
         I
    3.00 *** (       8)
         I  NO OPINION
         I
    4.00 ******** (      27)
         I  DISAGREE
         I
    5.00 ** (       3)
         I  STRONGLY DISAGREE
         I
         I.........I.........I.........I.........I.........I
         0        40        80       120       160       200
         FREQUENCY

MEAN            2.285      STD ERR          .072      MEDIAN          2.071
MODE            2.000      STD DEV          .940      VARIANCE         .883
KURTOSIS         .464      SKEWNESS        1.059      RANGE           4.000
MINIMUM         1.000      MAXIMUM         5.000      SUM           393.000
C.V. PCT       41.132      .95 C.I.        2.143            TO        2.426

VALID CASES       172      MISSING CASES       0
```

```
VAR009    I AM OK2
   CODE
          I
     1.00 ******* (     25)
          I  STRONGLY AGREE
          I
     2.00 ********************************* (     127)
          I  AGREF
          I
     3.00 **** (     12)
          I  NO OPINION
          I
     4.00 ** (      4)
          I  DISAGRFE
          I
     5.00 ** (      2)
          I  STRONGLY DISAGREE
          I
        0 ** (      2)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        40        80       120       160       200
          FREQUENCY

MEAN          2.006      STD ERR        .050      MEDIAN         1.972
MODE          2.000      STD DEV        .648      VARIANCE        .420
KURTOSIS      5.813      SKEWNESS      1.564      RANGE          4.000
MINIMUM       1.000      MAXIMUM       5.000      SUM          341.000
C.V. PCT     32.312      .95 C.I.      1.908             TO      2.104

VALID CASES     170      MISSING CASES     2
```

```
VAR010    YOU ARE OK3
   CODE
          I
     1.00 ***** (     17)
          I  STRONGLY AGREE
          I
     2.00 ******************************** (    123)
          I  AGREE
          I
     3.00 ** (      3)
          I  NO OPINION
          I
     4.00 ******** (     26)
          I  DISAGREE
          I
     5.00 ** (      2)
          I  STRONGLY DISAGREE
          I
        0 * (      1)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        40        80       120       160       200
          FREQUENCY

MEAN          2.257     STD ERR        .067     MEDIAN         2.057
MODE          2.000     STD DEV        .877     VARIANCE        .769
KURTOSIS       .974     SKEWNESS      1.262     RANGE          4.000
MINIMUM       1.000     MAXIMUM       5.000     SUM          386.000
C.V. PCT     38.841     .95 C.I.      2.125             TO     2.390

VALID CASES     171     MISSING CASES     1
```

```
VAR011      I AM OK3
   CODE
          I
     1.00 ********* (     32)
          I  STRONGLY AGREE
          I
     2.00 ******************************** (    125)
          I  AGREE
          I
     3.00 **** (     11)
          I  NO OPINION
          I
     4.00 ** (      4)
          I  DISAGREE
          I
          I.........I.........I.........I.........I.........I
          0        40        80       120       160       200
          FREQUENCY

MEAN          1.924     STD ERR        .044     MEDIAN        1.932
MODE          2.000     STD DEV        .582     VARIANCE       .339
KURTOSIS      2.740     SKEWNESS       .719     RANGE         3.000
MINIMUM       1.000     MAXIMUM       4.000     SUM         331.000
C.V. PCT     30.268     .95 C.I.      1.837           TO      2.012

VALID CASES     172     MISSING CASES     0
```

```
 08 SEP 76         FILE - NATC     - CREATED 08 SEP 76         PAGE  24

VAR012    NEED FOR UNCROSSED TRANSACTIONS
  . CODE
          I
     1.00 *********************************** (    68)
          I   STRONGLY AGREE
          I
     2.00 ************************************* (    71)
          I   AGREE
          I
     3.00 ***** (     8)
          I   NO OPINION
          I
     4.00 ********* (    15)
          I   DISAGREE
          I
     5.00 ****** (     9)
          I   STRONGLY DISAGREE
          I
        0 ** (     1)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY


MEAN           1.982      STD ERR            .086      MEDIAN          1.746
MODE           2.000      STD DEV           1.130      VARIANCE        1.276
KURTOSIS        .875      SKEWNESS          1.287      RANGE           4.000
MINIMUM        1.000      MAXIMUM           5.000      SUM           339.000
C.V. PCT      56.984      .95 C.I.          1.812            TO        2.153

VALID CASES      171      MISSING CASES      1
```

```
VAR013     EDUCATION LEVEL
    CODE
          I
     1.00 ************************************************* (       96)
          I   -HIGH----SCHOOL-
          I
     2.00 *********** (      20)
          I   -ASSOC--ARTS--
          I
     3.00 ****** (       9)
          I   GT2 YEAR-COLLEGE
          I
     4.00 ************** (      26)
          I   --B.S.----
          I
     5.00 ************ (      21)
          I   GRADUTE DEGREE--
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY

MEAN            2.163       STD ERR          .116       MEDIAN           1.396
MODE            1.000       STD DEV         1.517       VARIANCE         2.301
KURTOSIS        -.959       SKEWNESS         .832       RANGE            4.000
MINIMUM         1.000       MAXIMUM         5.000       SUM            372.000
C.V. PCT       70.134       .95 C.I.        1.934              TO        2.391

VALID CASES       172       MISSING CASES       0
```

```
VAR014    YEARS OF GOVERNMENT SERVICE
     CODE
          I
     2.00 ********** (    18)
          I  -I-OR-3-
          I
     3.00 *********** (    20)
          I  -4-OR-5-
          I
     4.00 **************************** (    53)
          I  -6-TO-10
          I
     5.00 ****************************************** (    81)
          T  GREATER-10
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY


MEAN          4.145      STD ERR         .076      MEDIAN         4.406
MODE          5.000      STD DEV         .995      VARIANCE        .990
KURTOSIS      -.248      SKEWNESS       -.936      RANGE          3.000
MINIMUM       2.000      MAXIMUM        5.000      SUM          713.000
C.V. PCT     24.008      .95 C.I.       3.996           TO        4.295

VALID CASES     172      MISSING CASES      0
```

```
 08 SEP 76          FILE - NATC      - CREATED 08 SEP 76          PAGE  30

VAR015     GS LEVEL BY GROUP
   CODE
          I
     2.00 *********************************************** (     46)
          I   GS-4-AND 5
          I
     3.00 ***************************** (     28)
          I   GS-6-AND-7
          I
     4.00 ****************** (     17)
          I   GS-8-AND-9
          I
     5.00 ******************************* (     30)
          I   GS-10--AND-11
          I
     6.00 ***************************************** (     40)
          I   GS-12-AND--13
          I
     7.00 ******* (     6)
          I   GS-14-AND--15
          I
        0 ****** (     5)
(MISSING) I
          I
          I.........I.........I.........I.........I.........I
          0        10        20        30        40        50
          FREQUENCY

MEAN           4.048      STD ERR          .128      MEDIAN          4.059
MODE           2.000      STD DEV         1.657      VARIANCE        2.745
KURTOSIS      -1.468      SKEWNESS         .067      RANGE           5.000
MINIMUM        2.000      MAXIMUM         7.000      SUM           676.000
C.V. PCT      40.928      .95 C.I.        3.795             TO       4.301

VALID CASES      167      MISSING CASES      5
```

```
08 SEP 76          FILE - NATC      - CREATED 08 SEP 76          PAGE  32

VAR016    AGE BY GROUP
     CODE
          I
     1.00 ******* (     11)
          I   -UNDER  24
          I
     2.00 ********************* (     41)
          I   -25- TO--29
          I
     3.00 ****************************** (     59)
          I   -30-TO---39
          I
     4.00 **************** (     32)
          I   -40-TO---49
          I
     5.00 *************** (     29)
          I   -OVER--49
          I
          I.........I.........I.........I.........I.........I
          0        20        40        60        80       100
          FREQUENCY


MEAN           3.157      STD ERR        .088      MEDIAN         3.076
MODE           3.000      STD DEV       1.157      VARIANCE       1.338
KURTOSIS       -.823      SKEWNESS       .101      RANGE          4.000
MINIMUM        1.000      MAXIMUM       5.000      SUM          543.000
C.V. PCT      36.637      .95 C.I.      2.983            TO       3.331

VALID CASES      172      MISSING CASES     0
```

APPENDIX D

Historical Data Bank

Statistical data bank is contained in this appendix for both populations. Populations are identified by the last integer of each line. The integer 1, corresponds with Pacific Missile Test Center, and the integer 2, corresponds with Naval Air Test Center.

```
45115245421512231
44222344222424221
15211545211314221
22324144311414251
44212421241542221
41315124321424221
24113244222555631
25211244222524231
15014444021512231
55152255112524241
55412144421554631
45223444213514221
44214425222414321
41215424121515331
44214222321514221
24224224222455641
25021444021542211
34223224222414151
24323224242355741
24222424222415351
25212222221414221
22212424141455631
24222244321555641
25112425111435331
54112224121555551
45215222222525251
54122244211445751
55215124222512231
44212224321413251
45214324222555751
44222424222414141
44224422222415551
25312124221412211
24224525322514221
54113424111545451
42222234323415531
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42223224222435541
22324222322312231
44224424222414221
24413223244415231
34352225222445541
24225424222532221
25214224222515541
24422131342245651
15215212242523231
45224254322413221
14222224221455641
45415135322514421
45212125222535351
34214444202435441
44124424242555651
25323223322515231
45115212121544631
24224224222455651
54224125222545631
44222424221435251
23222145322413111
25214222222114121
45212224222515251
25215245222535541
44222224222415351
24112122221422421
45213224222554431
44322243222412221
45515524121435541
45224242222554631
34211445522444531
45314243322313241
44222224222544531
52242244422455751
44010124022515251
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25222324111512221
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45114155122535631
44352221122414131
55115324122535541
44121224212555531
45212152222415241
45222152222525351
22222242222214221
45222224442245651
24213114242515251
45205222242515251
22212242221455641
44225444322554631
44224224222425641
43424224442355641
53214235211442321
35242444323214231
42212124222515341
34221234221544631
21244225232414321
44434424242535631
44110424221545251
54224224222400001
45224122222115341
42232322322225551
14411225133100001
44214422222512211
45015424311514031
35225424222555351
54224234223400001
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42222224222515251
45222254212524551
24224224222415541
44224244222524521
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34222224222535441
25215244244455641
45324114223415221
22233224222414231
54114245212545551
45114225211515351
54134355312555741
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44224422222225341
24214445221533221
44214224221545651
45212222222515341
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45212224222525421
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35013142022534451
41412422222215341
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44212124251515251    2421242422254561     24434244344424322    14125224121515542
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